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Indian Standard

MANGANESE ORE SINTERS FOR BLENDING FOR FERROMANGANESE PRODUCTION — SPECIFICATION

भारतीय मानक

फेरो मैंगनीज उत्पादन के लिये मैंगनीज अयस्क सिंटर – विशिष्टि

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NEW DELHI 110002

July 1989 **Price Group 1**

Ores and Raw Materials Sectional Committee, SMDC 16

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on 20 January 1989, after the draft finalized by the Ores and Raw Materials Sectional Committee had been approved by the Structural and Metals Division Council.

One of the major uses of manganese ore is for the production of ferromanganese which in turn is used in the steel industry. Present resource position of proved category of high grade manganese ore for ferromanganese is not so encouraging in our country and the availability of suitable ferromanganese grade ore has become very critical. Amongst the various suggestions given by the experts in the field, the most important one is the utilization of ore fines by making sinters.

There are small deposits of manganese fines as well as generation of fines during mining and handling of the manganese ore which are not now being utilized, mainly because they are not accepted by the ferromanganese plants. This should easily form 15 to 20 percent of the high grade ore reserves. Agglomeration by sintering is an established fact and so from the point of view of conservation as well as to meet the long term demands of manganese ore for ferromanganese production, sintering is the only alternative.

The studies have proved that manganese sinters can be used along with manganese ore in the burden for production of ferromanganese without any technological difficulties. While 16 percent of manganese sinters were used in the burden, this can easily be increased to even 40 percent if suitable blending is adopted. R & D efforts are also under way for using the ferromanganese fines as well as beneficiated high phosphorus manganese ore concentrates in the sinter feed along with manganese ore fines for the production of sinter for use in ferromanganese plants. These steps will greatly solve the problem of lack of high grade manganese ore for ferromanganese production. This will also help in utilization of waste.

Keeping in view the importance of manganese ore sinter, it was felt necessary to formulate this standard for sinter to be used in the ferromanganese production.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expresisng the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

MANGANESE ORE SINTERS FOR BLENDING FOR FERROMANGANESE PRODUCTION — SPECIFICATION

1 SCOPE

This standard covers the requirements of manganese ore sinters for blending for the production of ferromanganese.

2 REFERENCES

The Indian Standards listed below are necessary adjuncts to this standard:

IS No.	*Title*
IS 1387 : 1967	General requirements for the supply of metallurgical materials (*first revision*)
IS 4763 : 1982	Specification for manganese ore for production of ferromanganese (*first revision*)
IS 6495 : 1984	Method of tumbler test for iron oxides, lump ores, sinter and pellets (*first revision*)
IS 9963 : 1981	Method of determination of shatter index of iron ore lumps, sinters and pellets
IS 11607 : 1986	Methods of sampling iron ore sinters

3 SUPPLY OF MATERIAL

General requirements relating to the supply of manganese ore sinter for the production of ferromanganese shall be as laid down in IS 1387 : 1967.

4 CHEMICAL COMPOSITION

The manganese ore sinters shall have a minimum Mn/Fe ratio 2·5 which is comparable to Grade 6 of manganese ore specified in IS 4763 : 1982.

5 SIZE

The size range of manganese ore sinters shall be as follows:

Size, mm	*Percent*
+ 50	5, *Max*
− 50 + 10	85, *Min*
− 10	10, *Max*

6 STRENGTH

6.1 The strength of sinter is usually measured in terms of its (a) shatter index, and (b) tumbler index. Numerous procedures for measuring these indices are availabe. Suggested procedures for measuring these indices and the desirable values in accordance with these measurement procedures are indicated in **6.2** and **6.3**.

6.2 Shatter Index

The shatter index of sinter when determined in accordance with IS 9963 : 1981 shall not be lower than 75 percent.

6.3 Tumbler Index

The tumbler index of sinter when tested in accordance with IS 6495 : 1984 shall not be less than 50 percent and the abrasion index shall not exceed 10 percent.

7 SAMPLING

Representative samples of manganese ore sinter for testing shall be drawn in accordance with IS 11607 : 1986.

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